

REMARKS

Reconsideration of the instant application is respectfully requested. The present amendment is responsive to the Office Action of August 16, 2006, in which claims 1-19 remain pending. Of those, claims 1, 2, 11 and 12 have now been rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Publication 2004/0262516 of Motoi, et al. Claims 13 and 18 are now rejected under 35 U.S.C. §103(a) as being unpatentable over Motoi, in view of U.S. Patent 6,751,516 to Richardson. Claims 3-7 are rejected under 35 U.S.C. §103(a) as being unpatentable over Motoi, in view of Richardson, and further in view of U.S. Patent 4,555,626 to Suzuki. In addition, claims 8-10 have also been rejected under 35 U.S.C. §103(a) as being unpatentable over Motoi, in view of Richardson and Suzuki, and further in view of U.S. Patent Publication 2002/0162339 of Harrison, et al.

Claims 14-16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Motoi, in view of Richardson and Suzuki, and further in view of U.S. Patent 6,372,627 to Ring, et al. Finally, claims 17 and 19 are rejected under 35 U.S.C. §103(a) as being unpatentable over Motoi, in view of Richardson and Suzuki, and further in view of U.S. Patent 6,863,787 to Huynh, et al. For the following reasons, however, it is respectfully submitted that the application is now in condition for allowance.

Claim 11-19 have been cancelled, thus rendering the outstanding rejections thereto moot. In addition, claim 1 has been amended to incorporate the language of now cancelled claim 4 therein, thereby overcoming the §102(e) rejections to claims 1, 2, 11 and 12.

As to the §103 rejection of claim 4, the Applicants respectfully traverse the same for the previously proffered reason that Suzuki '626 does not in fact teach the additionally claimed element of electrically coupling a thermoelectric module to a current source

through an electrical connector disposed through a vacuum chamber wall of an FIB tool and into an interior vacuum section 518 of the FIB tool. In the first place, Suzuki is directed to shielding radiation in a light detector/sensor assembly. (Col. 1, line 5- col. 2, line 21). As such, a skilled artisan has no motivation to combine cooling techniques of an FIB processing apparatus with cooling techniques associated with detecting devices as taught in Suzuki. Moreover, even if the teachings of Motoi, Richardson and Suzuki were combined, Suzuki still fails to teach that the electrical connector (presumably “hermetically shielded lead wires 15” in Fig. 1 of Suzuki) is disposed through a vacuum chamber wall of an FIB tool and into an interior vacuum section of the FIB tool.

Notwithstanding the fact that the Suzuki apparatus is not an FIB processing device, there is no teaching or suggestion in the reference that the “connector” 15 is disposed through a vacuum chamber wall and into an interior vacuum section. Although it is stated in Suzuki that the enclosed volume 16 is kept in a vacuum (col. 3, line 67), it is also seen from the cut-away view of the chamber 16 that connectors 15 themselves do not penetrate through the base plate 9 so as to be disposed through a vacuum chamber wall and into an interior vacuum section 16. In Suzuki, a “vacuum chamber wall” would necessarily constitute one of: the base plate 9, the enclosing case 13 or the light-transmissive window 14. Stated another way, since connectors 15 do not penetrate into vacuum section 16, Suzuki fails to provide each of the missing claimed elements of Richardson and the other cited references of record.

In contrast, claim 4 of the present disclosure recites a solution to conventional commercial FIBs that have previously failed to incorporate sample temperature control features. (Specification, paragraphs [0023], [0032]). Although Motoi indicates in paragraph [0067] that the cooling mechanism of the SEM could be a Peltier element, the depiction of the temperature control unit 7a in Figure 2 is vague and does not specifically teach the claimed structural feature of electrically coupling the thermoelectric module to a current source through an electrical connector disposed through a vacuum chamber wall of an FIB tool and into an interior vacuum section of the FIB tool.


Furthermore, the Applicants respectfully submit the Examiner's statement "because the thermoelectric module needs power, and the FIB needs a vacuum to operate, ... there would be no other way to connect power to the thermoelectric module while maintaining the vacuum environment" is impermissible hindsight in view of the teachings of Motoi itself. For one, Motoi does not specifically state that the power source for a Peltier device need necessarily be located outside the FIB chamber (e.g., a battery). Secondly, in reviewing Motoi's working examples of SEM observation (e.g., paragraphs [0166], [0180]) sample temperatures on the order of -100°C are produced, which is suggestive of other types of non-Peltier cooling means actually used, such as helium freezing devices or liquid nitrogen. (Motoi, paragraph [0067]) As such, Applicants further submit that there is no teaching or suggestion in Motoi itself to provide the claimed coupling of a thermoelectric module to a current source through an electrical connector disposed through a vacuum chamber wall of an FIB tool and into an interior vacuum section 518 of the FIB tool.

Accordingly, the Applicants respectfully traverse §103 rejection of claim 4 (now claim 1), and submit that each of the remaining claims 1-10 are now in condition for allowance.

For the above stated reasons, it is respectfully submitted that the present application is now in condition for allowance. No new matter has been entered and no additional fees are believed to be required. However, if any fees are due with respect to this Amendment, please charge them to Deposit Account No. 09-0458 maintained by Applicants' attorneys.

Respectfully submitted,
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